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Methyl salicylate as a remarkable almost bound compound in some renowned Italian varietal wines

Versini, G., Moser, S., Carlin, S.

*Laboratorio di Analisi e Ricerca, Istituto Agrario San Michele all'Adige
38010 S.Michele all'Adige (TN), Italy - e-mail; giuseppe.versini@iasma.it*

Among the most important native Italian white wine-grape varieties, we include the Garganega - the basic variety for obtaining the renowned Venetian 'Soave' wine -, the Trebbiano di Soave - also involved in this production in increasing percentage -, and the Verdicchio from which the famous 'Verdicchio dei Castelli di Jesi' of the Marche region in Central Italy at the Adriatic Sea is obtained.

All such wine types are generally considered non-floral products, even if peculiar scents are perceived mostly in a little aged (1-2 years) wines.

Previous results regarding enzymatically free-made aglycons from bound forms in several grape varieties evidenced methyl salicylate almost in those of Trebbiano group (Versini, 1991). Recently modified SPE enrichment method for both free and bound aroma forms using a polyhydroxylated polystyrenic resin (ENV⁺ cartridge; Carlin, 1997) instead of XAD-2, allowed an improved recovery also of methyl salicylate precursors.

Garganega (see also Versini & Carlin, 1998; Di Stefano et al., 2002) and Trebbiano di Soave wines resulted remarkably rich in this bound compound, and consequently also on the free form, but at a lower level. In fact, in Garganega wines aglycon levels till about 100 µg/L have been measured, while even at about ten-fold more in wines of Trebbiano di Soave. Methyl salicylate bound form as β-primeveroside has been found also in tea leaves (Moon et al., 1996). The free forms in wines not older than 2 years were not higher than 10 µg/L in Garganega wines and until about 50 µg/L in the Trebbiano di Soave ones. β-Glycosidase treatment of wines can improve such free amount and possible sensorial relevance.

Sensory tests by adding methyl salicylate - a typical wintergreen oil balsamic scented compound - to neutral and not remarkably fruity wines as those quoted, proved in fact a threshold level of about 30-50 µg/L (chestnut honey-like scent), i.e. at level found in the Trebbiano di Soave wines and in any case as a possible contributor in the Garganega wines according to Meilgaard's theory. Due to the assumed and also genetically demonstrated identity (Grando, unpublished data) of the Trebbiano di Soave variety with the Verdicchio, one year old Verdicchio 'dei Castelli di Jesi' AOC wines have been analysed and a very similar level of free and bound methyl salicylate as well as of other aglycons as in Trebbiano di Soave wines has been found, this fact demonstrating also the aroma profile identity between such two varieties.

Other particular levels of some compounds have been detected in wines of such varieties group, i.e. a very remarkable amount of benzyl alcohol aglycon ranging from 1 to 2 mg/L (higher in Trebbiano di Soave/Verdicchio wines) and an interesting level of ho-diol (I) (2,6-dimethyl-2,7-octadiene-2,6-diol) in Garganega wines until 80 µg/L as free form, and this likely contributing to a terpenic Riesling-like scent probably through some related forms (Versini et al., 2003).